

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. (currently amended) A chemical treatment method by which a metal film formed on a material to be subjected to film formation substrate is etched into a predetermined pattern[[,]] comprising:

(a) providing a material comprising a first metal film coated on a substrate and a second metal film formed on said first metal film, said first metal film having a metal passivated layer on an exposed surface thereof, said first metal film being formed from a metal selected from the group consisting of chromium, titanium, tungsten, palladium and molybdenum, or an alloy thereof, said second metal film having a predetermined pattern,

[(a)] a cathode electrolysis reduction step comprising performing electrolysis reduction on a metal film as a cathode by using one of [(i)]

(b) immersing said material in an acidic reduction treatment solution containing an acid radical and [[(ii)]] or an alkaline reduction treatment solution containing a halogen ion, connecting a metal portion of said material to an electrolytic circuit such that said material is a cathode and applying an electric current to carry out an electrolysis, thereby producing nascent hydrogen, whereby said nascent hydrogen reduces said metal passivated layer to said first metal or an alloy thereof; and then

[[(b)]] an etching step comprising (c) etching the first metal film by contacting an exposed portion of said first metal or an alloy thereof [[in]] with an acidic etching treatment solution after the cathode electrolysis reduction step to form the predetermined pattern.

Claim 2. (currently amended) A method according to claim 1, wherein the cathode electrolysis reduction step (b) is carried out with the acidic reduction treatment solution which comprises [[one]] a compound selected from the group consisting of

hydrochloric acid, sulfuric acid, carboxylic acid, ~~hydrogen~~
~~fluoride~~ hydrofluoric acid and phosphoric acid.

Claim 3. (currently amended) A method according to claim 1,
wherein ~~the cathode electrolysis reduction step (b)~~ is carried
out with the alkaline reduction treatment solution which
comprises a halogen ion selected from the group consisting of
sodium chloride solution, potassium chloride solution and
potassium iodide solution.

Claim 4. (currently amended) A method according to claim 1,
wherein the acidic etching treatment solution contains a halogen
ion.

Claim 5. (currently amended) A chemical treatment method by
which a metal film formed on a ~~material to be subjected to film~~
~~formation~~ substrate is etched into a predetermined pattern [[,]]
comprising:

(a) providing a material comprising a first metal film coated on a substrate and a second metal film formed on said first metal film, said first metal film having a metal passivated layer on an exposed surface thereof, said first metal film being formed from a metal selected from the group consisting of chromium, titanium, tungsten, palladium and molybdenum, or an alloy thereof,

[(a)] — a cathode electrolysis reduction step comprising performing electrolysis reduction on a metal film as a cathode by using

(b) immersing said material in a reduction treatment solution containing a halogen ion, connecting a metal portion of said material to an electrolytic circuit such that said material is a cathode and applying an electric current to carry out an electrolysis, thereby producing nascent hydrogen, whereby said nascent hydrogen reduces said metal passivated layer to said first metal or an alloy thereof; and

[(b)] — an acid dip step comprising (c) dipping the metal film said material into an acidic etching treatment solution

after the cathode electrolysis reduction step so that an exposed portion of said first metal or an alloy thereof is in contact with said acidic etching treatment solution to form a predetermined pattern.

Claim 6. (previously presented) A method according to claim 5, wherein the acidic etching treatment solution contains a halogen ion.

Claim 7. (previously presented) A method according to claim 6, wherein the halogen ion in the acidic etching treatment solution is a chloride ion.

Claim 8. (currently amended) A method according to any one of claims 1 to 6, wherein ~~the cathode electrolysis reduction step further comprises dipping in step (b), a portion of the first metal film on said material is dipped into an etching acidic reduction treatment solution containing a halogen ion.~~

Claim 9. (currently amended) A method according to claim 8, wherein the first metal film is formed from one metal selected from the group consisting of chromium[[],] titanium[[],]
tungsten[[],] palladium and molybdenum.

Claim 10. (currently amended) A method according to claim 8, wherein the first metal film is formed from an alloy containing at least one metal selected from the group consisting of chromium[[],] titanium[[],] tungsten[[],] palladium and molybdenum.

Claim 11. (currently amended) A chemical treatment method by which a metal film formed on a material to be subjected to film formation substrate is etched into a predetermined pattern comprising:

(a) providing a material comprising a first metal film coated on a substrate and a second metal film formed on said first metal film, said first metal film having a metal passivated layer on an exposed surface thereof, said first metal film being

formed from a metal selected from the group consisting of chromium, titanium, tungsten, palladium and molybdenum, or an alloy thereof, and

(b) dipping [[a]] metal film said material in an acidic treatment solution containing a halogen ion, connecting a metal portion of said material to an electrolytic circuit for a predetermined time such that said material is a cathode and applying an electric current to carry out an electrolysis, thereby producing nascent hydrogen, whereby said nascent hydrogen reduces said metal passivated layer to said first metal or an alloy thereof and performing electrolysis reduction on the metal film as a cathode , to form a predetermined pattern.

Claim 12. (currently amended) A method according to any one of claims 1 to 5 or 11, wherein the first metal film is formed from ~~one metal selected from the group consisting of~~ chromium[[,]] titanium[[,]] tungsten[[,]] palladium and molybdenum.

Claim 13. (currently amended) A method according to any one of claims 1 to 5 or 11, wherein the first metal film is formed from an alloy containing ~~at least one element selected from the group consisting of~~ chromium[[],] titanium[[],]
~~tungsten[[],] palladium and molybdenum.~~

Claim 14. (original) A method according to claim 11, wherein the halogen ion is a chloride ion.

Claims 15 to 23. (canceled)

Claim 24. (currently amended) A method according to claim 4, wherein the halogen ion in the acidic etching treatment solution is a chloride ion.

Claim 25. (previously presented) A method according to claim 5, wherein the halogen ion in the reduction treatment solution is a chloride ion.

Claim 26. (currently amended) A method according to claim 3, wherein the alkaline reduction treatment solution which comprises a halogen ion is potassium chloride solution.

Claim 27. (currently amended) A method according to claim 1, wherein the first metal film comprises a nickel chrome chromium alloy.

Claim 28. (currently amended) A method according to claim 5, wherein the first metal film comprises a nickel chrome chromium alloy.

Claim 29. (currently amended) A method according to claim 11, wherein the first metal film comprises a nickel chrome chromium alloy.